Notes on the True Neuroptera.

J. F. McClendon.

2.—*On Venation in Neuroptera.*

The wings of Neuroptera have been variously treated by systematists, and a few species have been considered by Comstock and Needham in their excellent series of articles in the 32d and 33d volumes of the American Naturalist. In 1901 I commenced to collect material for a developmental and comparative study of the venation of the group, but on account of pressure of other duties, failed to get many pupae, and had to content myself with studying the tracheation of the fully formed wings by bleaching them for days in chlorine water.

In distinguishing the veins, I have used the nomenclature of Redtenbacher as applied by Comstock and Needham.

SIALINA.

The wings of *Sialina* are broad and seemingly irregularly reticulated, but if we leave out of consideration the cross veins, the venation can easily be reduced to the hypothetical type of Comstock and Needham. The anal space of the hind wings is thin and folded when at rest.

SIALIDÆ.

In *Corydalis texana*, Fig. 1, the sub-costa and radius run

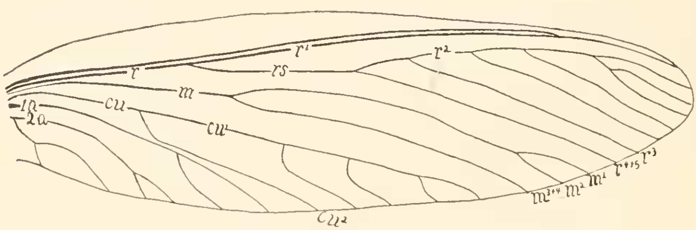

Fig. 1.—*Corydalis texana.* Fore wing. In this as well as in the succeeding figures the cross veins are omitted, save where they are represented by spaced lines.

parallel nearly to the tip of the wing, where they fuse. The radial sector has become pectinate by fusion of r^4 and r^5, as shown by Comstock and Needham. R^2 has three side branches, one of which is divided into two. M^3 and m^4 are fused. Cu^1 has three side branches. The first, second, and third anal veins each branch once.

In *Sialis infumata*, Fig. 2, the anterior wing is modified by the fusion of cu^1 and m for some distance, and associated with this, the radius assumes a bowed form. M^1 and m^2 are fused. In the hind wing the bases of the median and cubitus are fused. M^1 and m^2 are fused. M^3 and m^4 are fused.

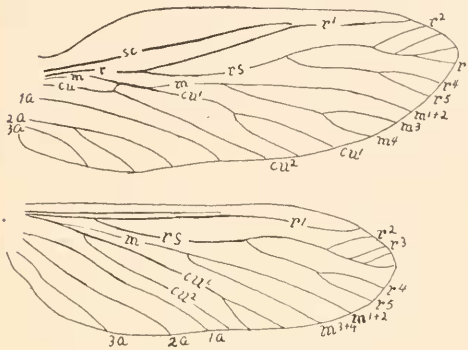

Fig. 2.—*Sialis infumata.*

RAPHIDIDÆ.

In *Raphidia oblita*, Figs. 3 and 4, the sub-costa reaches the margin of the wing before the pterostigma. In the anterior wing the radius, media, and cu^1 are fused for a short distance. In the posterior wing the bases of the radius and media are fused for some distance and cu fuses with the first anal through the middle third of its course.

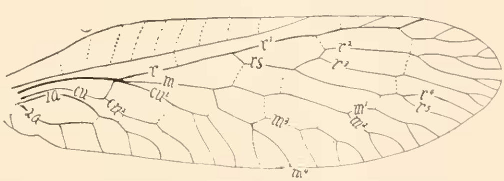

Fig. 3.—*Raphidia oblita.* Fore wing.

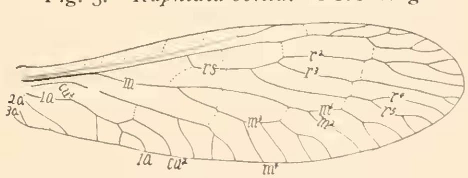

Fig. 4.—*Raphidia oblita.* Hind wing.

HEMEROBINA (MEGALOPTERA).

MYRMELEONIDÆ.

In the *Myrmeleonidæ* we have typical venation save that many accessory veins have been added distally and the branching of the median has been almost or quite completely suppressed.

In *Ululodes hyalina*, Fig. 5, the sub-costa and radius run parallel to the pterostigma, where they unite. The radial sector is branched dichotomously, though it is functionally

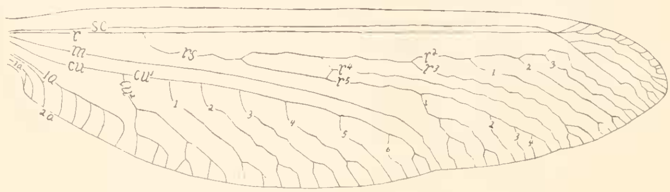

Fig. 5.—*Ululodes* (Ulula) *hyalina*. Fore wing.

pectinate, R^4 being united to R^{2+3} by a strong cross vein. The media is unbranched. R^2, r^5, Cu^1 and the anal furnish numerous veinlets by pectinate branching.

In *Myrmeleon rusticus*, Fig. 6, the number of accessory

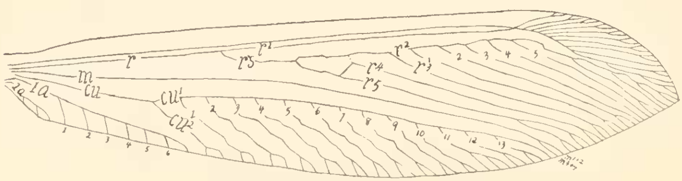

Fig. 6.—*Myrmeleon rusticus*. Fore wing.

veins is very much increased, Cu^1 having thirteen branches, each of which subdivides once.

HEMEROBIDÆ.

In the *Hemerobidæ* the radial sector has become pectinate by splitting of R^{4+5} as shown by Comstock and Needham for *Hemerobius*.

In the fore wing of *Micromus posticus*, Fig. 7, the radial sector is suppressed and the radius has become pectinate. Whether this has been caused by fission or coalescence, I have not enough material

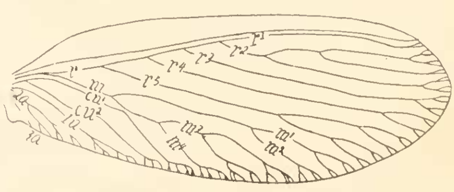

Fig. 7.—*Micromus posticus*. Fore wing.

to decide, but when we compare it with the hind wing, where the radial sector is distinct, we see the magnitude of the change. The cross-vein connecting r^1 with r^4 in the hind wing, Fig. 8, suggests that the change has been brought about by shifting of the trachea from longitudinal to cross veins—many tracheæ are found misplaced in the pupa, and this change might easily occur—the change would then be coalescence and not fission, as can be easily understood by studying the accompanying figures of the fore and hind wings. The sub-costa and r^1 run nearly parallel to the end of the wing.

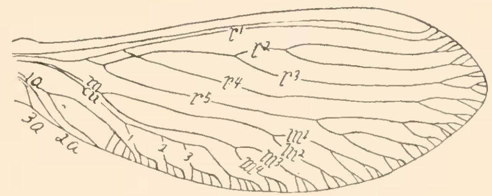

Fig. 8.—*Micromus posticus.* Hind wing.

In *Polystoechotes punctatus*, Fig. 9, R^2, by pectinate branching, gives rise to fourteen veinlets, each of which subdivides twice. Cu^1 has seven such branches. The sub-costa and r^1 fuse at the pterostigma and give rise to fifteen such veinlets.

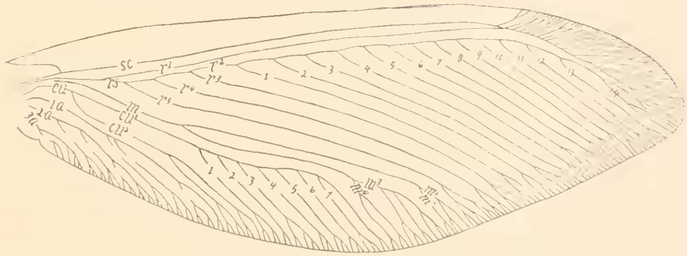

Fig. 9.—*Polystoechotes punctatus.* Fore wing.

MANTISPIDÆ.

In *Mantispa interrupta*, Figs. 10 and 11, the sub-costa runs through the middle of the pterostigma for the last third of its course, and disappears near its end. The base of

Fig. 10.—*Mantispa interrupta.* Fore wing.

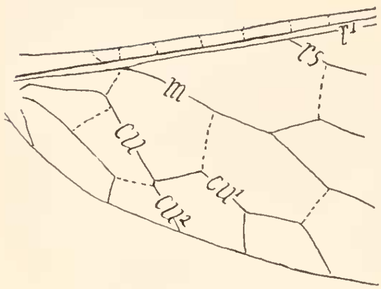

Fig. 11.—*Mantispa interrupta.* Part of hind wing.

the media fuses with that of the radius for some distance; and, in the anterior wing, Fig. 10, the media dips down and then fuses with the radius again thus forming a small triangular cell. After the media is finally free it divides into the typical number of branches.

CHRYSOPIDÆ.

In the *Chrysopidæ* we find a great modification by coalescence.

In the anterior wing of *Chrysopa plorabunda*, Fig. 12, the veins in the middle run zigzag and fuse at their angles, forming a reticular structure without the interposition of true cross veins. The so-called "cross vein" of the "third cubital cell" (m^{3+4}) behaves in a very peculiar manner: m^{3+4} runs obliquely forward and coalesces for some distance with m^{1+2}, and then separates from it again.

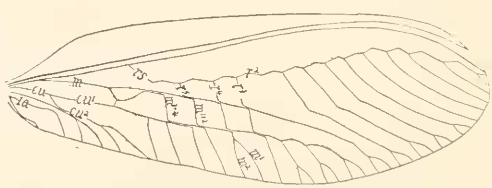
Fig. 12.—*Chrysopa plorabunda.* Fore wing. Where veins have coalesced I have represented them slightly separate for clearness of interpretation.

The hind wing, Fig. 13, resembles Myrmeleon, save that *rs* and *m* coalesce for some distance.

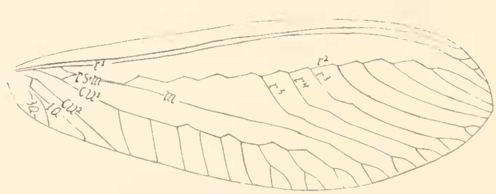
Fig 13.—*Chrysopa plorabunda.* Hind wing.

PANORPINA (MECAPTERA.)

PANORPIDÆ.

The venation of the *Panorpidæ* is quite typical, save for the fusion of veins near the base of the wing, due to narrowing of this region, and the development of a few accessory veins.

In *Panorpa confusa*, Fig. 14, r^2 branches once.

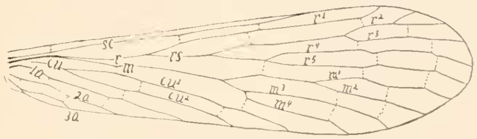

Fig. 14.—*Panorpa confusa.* Wing.

In *Bittacus strigosus*, Fig. 15, *m* and Cu^1 coalesce for some distance.

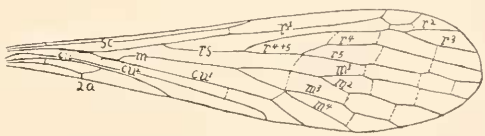

Fig. 15.—*Bittacus strigosus.* Wing.

An Interesting New Genus and Species of Encyrtidae.

By L. O. Howard.

The newspapers have given an account of how the State Board of Horticulture of California sent an orange or lemon tree to China in charge of Mr. George Compere, in order to stock it with Chinese parasites of the red scale and then return it to California. Mr. Compere has been good enough to send me specimens of the parasites reared in China, one of which proves to be a small variety of *Aphelinus diasphidis* mihi, and the other is the remarkable form described below.

COMPERIELLA gen. nov.

Female: Body robust, abdomen slightly shorter than thorax; head not oblong; antennae flattened, broad; tip of scape, pedicel, funicle joints and club of equal width, pedicel tringu-